

Catalogue of American Amphibians and Reptiles.

ERNST, CARL H. 1971. *Chrysemys picta*.

***Chrysemys picta* (Schneider)
Painted turtle**

Testudo picta Schneider, 1783: 348. Type-locality, unknown, originally listed in error as England; designated as vicinity of New York City by Schmidt (1953: 99). Type and collector not stated.

Chrysemys cinerea Bonnaterre, 1789: 25. Type-locality, unknown, designated as vicinity of Philadelphia by Schmidt (1953: 99). Type and collector not stated.

Emys bellii Gray, 1831: 31. See *C. p. bellii*.

Emys oregonensis Harlan, 1837: 382. See *C. p. bellii*.

Chrysemys picta: Gray, 1856: 32. Transfer to *Chrysemys*.

Chrysemys marginata Agassiz, 1857: 439. See *C. p. marginata*.

Chrysemys dorsalis Agassiz, 1857: 440. See *C. p. dorsalis*.

Chrysemys nuttalli Agassiz, 1857: 642. See *C. p. bellii*.

Chrysemys pulchra Gray, 1873: 147. See *C. p. bellii*.

Chrysemys treleasei Hurter, 1911: 235. See *C. p. bellii*.

• **CONTENT.** Four subspecies are recognized: *Chrysemys picta picta*, *C. p. bellii*, *C. p. marginata*, and *C. p. dorsalis*.

• **DEFINITION.** Adults are 100–252 mm in carapace length; females average larger than males. The carapace is smooth, unkeeled, and posteriorly unserrated. It is black to olive in ground color and marked with patterns of red and yellow. The marginals always contain red markings. The plastron is unhinged and yellow, and may contain a pattern of black and/or reddish-brown forming a blotch of varying size and shape. The upper jaw is notched in front with toothlike projections on each side. The narrow alveolar surface of the upper jaw has a weakly developed ridge. The skin color is black to olive. The legs and tail are striped with red and yellow. A yellow line runs backward from below the eye and may meet a similar line from the lower jaw. A yellow streak and a yellow spot occur behind the eye. Two yellow lines on the throat enclose a narrower yellow stripe and meet at the tip of the jaw. Males have elongated claws on their forefeet, and longer tails than females, with the anal opening nearer the tip.

• **DESCRIPTIONS.** General descriptions are given by Babcock (1919), Bishop and Schmidt (1931), Pope (1939), Carr (1952), and Conant (1958). Detailed anatomical and histological descriptions are given by Agassiz (1857), Ruckes (1937), Walker (1947), Williams (1950), Mosimann (1958), Parsons (1959, 1960, 1968), Shah (1962), McDowell (1964), Burda (1965), and Zug (1966).

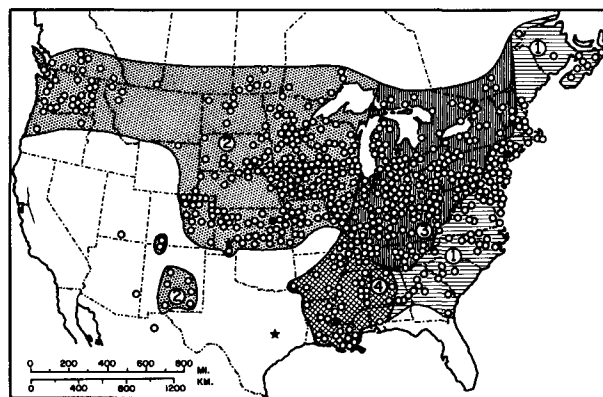
• **ILLUSTRATIONS.** For color photographs of adults see Babcock (1919), Schmidt and Inger (1957), Conant (1958), and Pritchard (1967); for other photographs and drawings of adults see Cahn (1937), Pope (1939), Carr (1952), Smith (1956), and Smith (1961). Juveniles and hatchlings are shown by color photographs in Conant (1958) and Pritchard (1967), and by other photographs in Agassiz (1857), Cahn (1937), and Carr (1952). Photographs or drawings of the egg are presented in Agassiz (1857), and Pope (1939). The bony structure of the shell is photographed in Pope (1939). Plastral markings are illustrated in Cahn (1937), Bishop and Schmidt (1931), and Smith (1961). Anatomical illustrations are found in Ruckes (1937), Walker (1947), Parsons (1959), Burda (1965), and Zug (1966).

• **DISTRIBUTION.** *Chrysemys picta* is restricted to North America, but extends from the Atlantic to the Pacific coast. Four subspecies occur within the range. *Chrysemys p. picta* ranges from Nova Scotia, New Brunswick, and eastern Quebec, southward through New England and the Atlantic coastal states to Georgia, and westward into eastern Alabama. *Chrysemys p.*

marginata ranges from western Quebec and adjacent Ontario south in the east-central United States to Tennessee, and eastward into New York, Pennsylvania, West Virginia, Maryland, Virginia, North Carolina, and northern Georgia. *Chrysemys p. dorsalis* ranges from southern Illinois and Missouri southward along both sides of the Mississippi River to the Gulf Coast, eastward into Alabama, and westward to southeastern Oklahoma. *Chrysemys p. bellii* ranges from western Ontario across southern Manitoba, Saskatchewan, and Alberta to British Columbia in Canada, southward to Missouri, Kansas and the Oklahoma panhandle in the east, and across the Rocky Mountains in Colorado and Wyoming to Idaho, northern Oregon and Washington in the west. *Chrysemys p. bellii* is also found in scattered relic populations in Utah, Arizona, New Mexico, and Chihuahua, Mexico.

• **FOSSIL RECORD.** Pleistocene records are from Brazos County, Texas (Hay, 1924), Meade County, Kansas (Schultz, 1965), Oakland County, Michigan (Wilson, 1967), and Pulaski County, Indiana (Field Mus. Nat. Hist. PR-432). Other fossils that may represent either *C. picta* or the fossil species *C. timida* (Hay, 1908) have been reported from the Lower Pliocene, Trego County, Kansas (Wilson, 1968), the Miocene-Pliocene, Brown County, Nebraska (Estes and Tihen, 1964), and post-glacial, Coles County, Illinois (Galbreath, 1938).

• **PERTINENT LITERATURE.** *Chrysemys picta* is a popular experimental animal and has an extensive literature. The best general accounts are by Babcock (1919), Cahn (1937), Pope (1939), Carr (1952), and Cagle (1954). Other important references are listed below by topics, but these by no means represent the entire literature. Taxonomy: McDowell (1964), and Weaver and Rose (1967). Dispersal and intergradation: Bleakney (1958), Hartman (1958), Waters (1964, 1969), Ernst (1967, 1970), and Pough and Pough (1968). Reproduction: Taylor (1933), Cagle (1937), Legler (1954, 1958), Powell (1967), Clark (1967), Gibbons (1968b), Mahmoud (1968), and Gibbons and Tinkle (1969). Embryology, growth and form: Cunningham (1922), Fisk and Tribe (1949), Jolicœur and Mosimann (1960), Pearse (1923), Sexton (1959b, 1965), and Gibbons (1967a, 1968b). Ecdysis: Sexton (1965). Thermal relationships including physiological reactions: Hall (1922), Baldwin (1925a, 1925b), Musacchia and Sievers (1956), Rapatz and Musacchia (1957), Musacchia (1959), Fox and Musacchia (1959), Sexton (1959a), Kaplan and Rueff (1960), Musacchia and Grundhauser (1962), Wurth and Musacchia (1964), Hutchison and Kosh (1965), Brattstrom (1965), Masat and Musacchia (1965), Manwell and Schlesinger (1966), Hutchison, *et al.* (1966), Gibbons (1967b), and Kosh and Hutchison (1968). Food and feeding: Surface (1908), Pearse,



MAP. The solid circles mark the type-localities; open circles indicate other selected localities. The stars indicate fossil localities.

et al. (1925), Raney and Lachner (1942), Lagler (1943), Knight and Gibbons (1968), and Belkin and Gans (1968). Population dynamics: Sexton (1959a), Ream and Ream (1966), and Gibbons (1968a). Effects of light and hormones on daily activity: Evans (1940). Movements and orientation: Casteel (1911), Noble and Breslau (1938), Cagle (1944), Williams (1952), Gould (1959), Sexton (1959a), Ortleb and Sexton (1964), Kirk and Bitterman (1965), Heidt and Burbridge (1966), and Emlen (1969). Relationship to aquatic vegetation: Sexton (1959a), and Meseth and Sexton (1963).

• **ETYMOLOGY.** The name *picta* derives from the Latin *pictus*, meaning painted and probably refers to this turtle's bright markings. Subspecific names are derived as follows: *bellii*, for Thomas Bell; *marginata*, from the Latin *margo* (genitive *marginis*) meaning edge or border and probably refers to the marginal, bright red markings; and *dorsalis*, from the Latin *dorsum* pertaining to the back and refers to the dorsal stripe.

1. *Chrysemys picta picta* (Schneider)

Testuda picta Schneider, 1783: 348. See species account.
Chrysemys cinerea Bonnaterrre, 1789: 25. See species account.
Chrysemys picta: Gray, 1856: 32. See species account.
Chrysemys picta picta: Bishop and Schmidt, 1931: 136. Recognition of subspecies.

• **DEFINITION.** Vertebral and costal seams aligned. Carapacial seams have wide, light borders. Plastron is unicolor yellow. A narrow, pale, dorsal carapacial stripe may be present. Adult carapace length is 100–182 mm.

• **REMARKS.** Intergradation with *C. p. marginata* has been reported in New England by Hartman (1958), Waters (1964, 1969), and Pough and Pough (1968), and in eastern Tennessee by Johnson (1954) and Ernst (1970). Intergradation with *C. p. dorsalis* occurs in Alabama (Ernst, 1967).

Because the type locality of *C. p. picta* is unknown, Mittleman (1945) suggested that it be restricted to Lancaster, Pennsylvania. My study of over 1000 specimens from Lancaster County, Pennsylvania, shows that they compose an intergrade *C. p. picta* × *marginata* population, so the restriction of the type locality to the vicinity of New York City by Schmidt (1953: 99) is more logical and should be accepted.

2. *Chrysemys picta bellii* (Gray)

Emys bellii Gray, 1831: 31. Type-locality not stated; designated as Manhattan, Kansas by Smith and Taylor (1950: 34). Type and collector not stated. Original description of *C. p. bellii* was based on a specimen purchased from Ashton Lever by the Museum of the Royal College of Surgeons of England in 1806. The type was destroyed during the bombing of 1941.

Emys oregonensis Harlan, 1837: 382. Type-locality, vicinity of Oregon or Columbia River. Type not stated. Collector, Thomas Nuttall.

Chrysemys nuttalli Agassiz, 1857: 642. Type-locality unknown. Schmidt's (1953) statement of the type-locality is incorrect. Type not stated. Collector, James M. Barnard.

Chrysemys pulchra Gray, 1873: 147. Type-locality, North America, Mississippi, restricted to upper Mississippi River by Schmidt (1953: 100). Type and collector not stated.

Chrysemys treleasei Hurter, 1911: 235. Type-locality, "east of Mississippi River, in Madison, St. Clair, and Monroe Counties, Ill[inois]." Cotypes: U. S. Natl. Mus. 49427-8, collected by J. Hurter, July 3, 1908, and U. S. Natl. Mus. 49429, collected by J. Hurter, July 9, 1905. Based on specimens having a red stain on the plastron. Cotypes examined by the author.

Chrysemys marginata bellii: Stejneger and Barbour, 1917: 118. Relegated to a subspecies of *C. marginata*.

Chrysemys bellii bellii: Ruthven, 1924: 340. Reinstated to specific level.

Chrysemys picta bellii: Bishop and Schmidt, 1931: 136. Re-

assigned as a subspecies of *C. picta*. First use of this combination.

Chrysemys picta bellii: Schmidt, 1953: 100. Emendation of ending.

• **DEFINITION.** Vertebral and costal seams alternating. Carapacial seams have dark borders. A reticular pattern present on the carapace. Plastron with a large branching figure. A narrow pale, dorsal carapacial stripe may be present. Adult carapace length is 100–252 mm.

Intergradation with *C. p. marginata* and *C. p. dorsalis* occurs in Illinois (Bishop and Schmidt, 1931; Cahn, 1937; and Smith, 1961). It supposedly also intergrades with *C. p. marginata* in Wisconsin and the northern peninsula of Michigan, but this has not been confirmed.

3. *Chrysemys picta marginata* Agassiz.

Chrysemys marginata Agassiz, 1857: 439. Type-locality: "Racine, Wisconsin"; "Milwaukee, Wisconsin"; "Flint, Michigan"; "Ann Arbor, Michigan"; "Delphi, Indiana"; and "Burlington, Iowa"; restricted to northern Indiana by Schmidt (1953: 99). Cotypes: Univ. Mich. Mus. Zool. 63519, collected by Alex Winchell; Mus. Comp. Zool. 1780, collected by Franklin Hill, M. C. Z. 1789–90, collected by J. A. Lapham, M. C. Z. 1791, collected by Alex Winchell, and M. C. Z. 1796 collected by Manly Miles; Univ. Ill. Mus. Nat. Hist. 41529, collected by Manly Miles. Dates of collections not given. Cotypes not examined by the author.

Chrysemys bellii marginata: Ruthven, 1924: 340. Relegated to a subspecies of *C. bellii*.

Chrysemys picta marginata: Bishop and Schmidt, 1931: 136. Reassigned as a subspecies of *C. picta*. First use of this combination.

• **DEFINITION.** Vertebral and costal seams alternating. Carapacial seams have dark borders. Plastron with a non-branching figure. A narrow pale, dorsal carapacial stripe may be present. Adult carapace length is 100–187 mm.

• **REMARKS.** Intergradation with *C. p. picta* and *C. p. bellii* is discussed under those subspecies. Intergradation with *C. p. dorsalis* occurs in western Kentucky and northwestern Tennessee (Ernst, 1970). Bleakney (1958) suggested that this subspecies is an intra-specific hybrid of *C. p. bellii* and *C. p. dorsalis*, but offered little evidence. Additional study of this relationship is needed.

4. *Chrysemys picta dorsalis* Agassiz.

Chrysemys dorsalis Agassiz, 1857: 440. Type-localities: "Mississippi" (market at Natchez, Adams County; Washington County), and "Louisiana" (Lake Concordia); restricted to vicinity of Natchez, Mississippi by Ernst (1967: 133). Cotypes: U. S. Natl. Mus. 21, collected by B. L. C. Wailes; Mus. Comp. Zool. 1801, collected by B. L. C. Wailes, and 31960, collected by W. Sargent. Dates of collections not given. Cotypes examined by the author.

Chrysemys marginata dorsalis: Stejneger and Barbour, 1917: 118. Relegated to a subspecies of *C. marginata*.

Chrysemys picta dorsalis: Bishop and Schmidt, 1931: 136. Reassigned as a subspecies of *C. picta*. First use of this combination.

• **DEFINITION.** Vertebral and costal seams alternating. Carapacial seams have wide, light borders. Plastron is unicolor yellow. A prominent, wide, dorsal carapacial seam is present. Adult carapace length is 100–152 mm.

COMMENT

The zones of intergradation between the subspecies of *C. picta* have been studied in greater detail than in any other American turtle. Continued studies of this type will insure that all the intergradation patterns will be understood in the near future.

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